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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/055,164	10/29/2001	Wade W. Smith	WMS-15	9573

7590 04/23/2004

Spencer T. Smith  
53 Silver Brook Lane  
North Granby, CT 06060

EXAMINER
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BORISSOV, IGOR N

ART UNIT	PAPER NUMBER
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3629

DATE MAILED: 04/23/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/055,164

Applicant(s)

SMITH, WADE W.

Examiner

Igor Borissov

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE \_\_\_\_\_ MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 3 and 4 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Longini (US 4,509,679) in view of Proffitt et al. (US 5,415,024).**

#### **As per claims 1 and 4,**

Longini teaches an energy use monitoring system within an apartment unit, wherein a quantity of energy used by each apartment unit is proportional to the volume of fluid received, which is metered by change in flow, multiplied by the temperature difference between the received and the returned water (column 1, lines 54-62). The readings for each unit are accumulated over time, suggesting the identification of each unit (column 1, lines 63-64).

However, Longini does not teach a pair of pressure transducers to be connected proximate the upstream and downstream sensing points of a heat transfer device for supplying pressure data to said register.

Longini, also, does not explicitly teach that computation of energy use, which is conducted by multiplying the change in flow by the temperature difference between the received and the returned water, includes a multiplication of square root of said change in pressure by said temperature difference.

Proffitt et al. teach an apparatus used to measure the energy input and the heat loss from the apparatus, comprising pressure and temperature sensors disposed upstream and downstream from the apparatus for computing a change in pressure and

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temperature, and a programmable logic controller to which the input of measurements are directed (column 3, lines 55 - column 4, lines 25; column 9, lines 5-7).

Official notice is taken that it is well known from thermodynamic principles that flow (in pipes) is directly related to the square root of the pressure change across it controlling flow impedance; as well as other relationships between pressure, temperature and volume of fluids.

Therefor, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Longini to include a pair of pressure/temperature transducers to be connected proximate the upstream and downstream sensing points of a heat transfer device, because it would increase the accuracy of energy used measurement, thereby make it more attractive to the customers.

**Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Longini and Proffitt et al. in view of Saar et al. (US 6,430,514).**

**As per claim 3**, Longini and Proffitt et al. teach all the limitations of **claim 3**, except that the serial number of the heat transfer device is transmitted.

Saar et al. teach a water management system for an apartment including a number of water consuming devices each equipped with flow and temperature metering monitors, wherein each monitor transmits a data package to a host computer, said data package including a serial number (column 2, lines 2-4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Longini and Proffitt et al. to include that the serial number of the heat transfer device is transmitted to a host computer, because it would enhance the accuracy of volumetric calculations in water monitoring systems.

***Allowable Subject Matter***

**Claim 2** is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

**Claim 2.** Longini and Proffitt teach an energy use monitoring system within an apartment unit comprising pressure and temperature sensors disposed upstream and downstream from a heat transfer device for computing a change in pressure and temperature, and a programmable logic controller to which the input of measurements are directed.

However, Longini and Proffitt do not teach means for multiplying the accumulated computed square root of the change in pressure times the change in temperature by:

- a. the time duration between the periodic multiplying of the square root of the change in pressure times the change in temperature,
- b. 8.33, and
- c. a constant defined by dividing a flow rate by the square root of the pressure drop across the heat transfer device for the flow rate defined in a manufacturer's catalog for that heat transfer device.

### ***Response to Arguments***

Applicant's arguments filed on 1/23/04 have been fully considered but they are not persuasive.

In response to applicant's argument that the prior art fails to disclose computational means for multiplying variations in pressure and temperature, examiner maintains that Proffitt discloses said programmable logic controller for receiving inputs from data measurements, to store data and relationships required by the method to solve gas law and thermodynamic equations incorporating such data (column 2, line 66 – column 3, line 2).

In response to applicant's argument that the prior art does not disclose multiplication of square root of change in pressure by said temperature difference,

examiner point out that it is well known from thermodynamic principles that the flow rate is directly proportional to the calculated pressure drop across a restriction (See, for example, "Flow & level calibration notes; Page 4 (of examiner's numeration); Square Root Extractor). Therefore, use of flow rate for calculation of energy transferred, as disclosed in Longini and Proffitt, is an equivalent of using a square root of the differential pressure for said calculation of energy transferred, as taught in applicant's specification.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure (see form PTO-892).

Any inquiry concerning this communication should be directed to Igor Borissov at telephone number (703) 305-4649.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Receptionist whose telephone number is (703) 872-9306.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Supervisor, John Weiss, can be reached at (703) 308- 2702.

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Any response to this action should be mailed to:

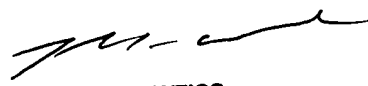
***Commissioner of Patents and Trademarks***  
***Washington D.C. 20231***

or faxed to:

**(703) 872-9306** [Official communications; including After Final  
communications labeled "Box AF"]

Hand delivered responses should be brought to Crystal Park 5, 2451 Crystal  
Drive, Arlington, VA, 7<sup>th</sup> floor receptionist.

JB

  
**JOHN G. WEISS**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 3600**